3. (Amended) A method for merging partially filled ATM cells as in claim 2 wherein a header of said third ATM cell further includes information required to reconstruct the partially filled ATM cells contained within the third ATM cell.

14. (Amended) An ATM network, comprising:

a first node configured to identify partially filled ATM cells within an ATM cell stream passing through the first node and to merge two or more of the partially filled ATM cells in the cell stream into a merged cell the merged cell having information indicative of (i) a merging method used, and (ii) a padding method used for one of the partially filled ATM cells; and

a second node coupled to the first node and configured to identify a merged ATM cells and to split the merged ATM cell into two or more partially filled ATM cells.

24. (Amended) The method of claim 1 wherein the [header of the] third ATM cell further includes information indicative of the number of partially filled ATM cells contained within the third ATM cell.

25. (Amended) The ATM network of claim 14 wherein the [header of the] merged cell further includes information indicative of the number of partially filled ATM cells contained within the third ATM cell.

27. (New) The method of claim 1 wherein the information indicative of the merging method used and the padding method used is contained within a header of the third ATM cell.

28. (New) The ATM network of claim 14 wherein the information indicative of the merging method used and the padding method used is contained within a header of the merged cell.

29. (New) The method of claim 1 wherein at least one of the first or second partially filled ATM cell is identified on the basis of at least one of the following indicia: a connection number, a VCI/VPI, a PTI, or AAL information.

1 30. (New) The ATM network of claim 14 wherein the first node is configured to identify partially

2 filled ATM cells on the basis of at least one of the following indicia: a connection number, a

3 VCI/VPI, a PTI, or AAL information.

1 31. (New) The ATM network of claim 14 wherein the first ATM node is configured to check for a

2 match between VPIs/VCIs of waiting partially filled ATM cells and a VCI/VPI of a fully packed

3 ATM cell in the cell stream.

1 32. (New) The ATM network of claim 31 wherein the first ATM node is further configured to

2 reinsert the waiting partially filled ATM cells into the cell stream and before the fully packed cell

3 when the VPIs/VCIs of the waiting partially filled ATM cells and the VCI/VPI of the fully packed

4 ATM cell, to avoid cell out-of-order transmission within the ATM cell stream.

1 33. (New) A method, comprising identifying partially filled ATM cells within an ATM cell stream

2 according to a lookup table indexed by connection identification information indicating whether or

3 not a connection includes partially filled ATM cells that can be merged, and merging two or more of

4 the partially filled ATM cells into a fully packed ATM cell.

1 34. (New) The method of claim 33 wherein the fully packed ATM cell has a header that includes

2 information indicative of a merging method used.

1 35. (New) The method of claim 34 wherein the fully packed ATM cell further includes information

2 required to reconstruct the two or more partially filled ATM cells.

1 36. (New) The method of claim 35 wherein the fully packed ATM cell further includes information

2 indicative of the padding method used in the two or more partially filled ATM cells.

1 37. (New) An ATM node, comprising a cell merging apparatus configured to identify partially filled

2 ATM cells within a cell stream according to a lookup table indexed by connection identification

3 information, and to merge two or more partially filled ATM cells into a third ATM cell.